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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/904,505	07/16/2001	Akira Tsuboyama	684.3218	2262

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EXAMINER

DUONG, THOI V

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/904,505

Applicant(s)

TSUBOYAMA ET AL.

Examiner

Thoi V Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. This office action is in response to the Amendment, Paper No. 10, filed October 08, 2002.

Accordingly, claims 1-5 were amended. Currently, claims 1-5 are pending in this application.

#### ***Drawings***

2. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masi (USPN 3,844,637) in view of Hanna et al. (USPN 6,174,455 B1).

As shown in Figs. 1 and 2, Masi discloses a luminescence device, comprising a pair of electrodes 14 and 18, and at least one organic compound layer including an organic compound layer 20 comprising a mixture of a liquid crystal compound and an organic phosphorescent compound (col. 2, lines 24-37). Masi discloses a luminescence device that is basically the same as that recited in claims 1, 2 and 5 except that the

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liquid crystal compound does not have an electronic carrier-transporting function and does not assume a smectic phase as well as a phosphorescent function. Hanna discloses some liquid crystal compounds which have both electron transport capability and hole transport capability and can provide luminescence when mixed with a fluorescent material in order to use them as a material for an electroluminescence device (col. 2, lines 56-67; col. 3, lines 1-2). Hanna also discloses that the liquid crystal compound has a liquid crystal phase comprising a smectic phase (col. 4, lines 7-14).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the luminescence device of Masi with the teaching of Hanna by employing a liquid crystal compound having an electronic carrier-transporting function and a smectic phase as well as a phosphorescent function so as to exhibit liquid crystallinity and charge transport capability for the device.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masi (USPN 3,844,637) in view of Hanna et al. (USPN 6,174,455 B1) as applied to claims 1, 2 and 5 above and further in view of Bock et al. (USPN 6,437,123).

The luminescence device of Masi as modified in view of Hanna above includes all that is recited in claim 3 except for a liquid crystal compound assuming a discotic phase. Bock discloses liquid crystal compounds, which is capable of exhibiting a discotic phase, suitable for transport of holes, and known as electric charge carriers for use in luminescence devices, including such as triphenylene, phtalocyanine, etc... (col. 1, lines 3-21). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the luminescence device of Masi with

the teaching of Bock by employing a liquid crystal compound assuming a discotic phase so as to obtain a stable homeotropic monodomain alignment for the device.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Masi (USPN 3,844,637) in view of Hanna et al. (USPN 6,174,455 B1) as applied to claims 1, 2 and 5 above and further in view of Applicant's Prior Art (Fig. 3).

The luminescence device of Masi as modified in view of Hanna above includes all that is recited in claim 4 except for a structure of the phosphorescent compound. Applicant's Prior Art Fig. 3 discloses a luminescence device comprising a luminescence layer 5 which includes a phosphorescent compound such as PtOEP having a planar molecular skeleton. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the luminescence device of Masi with the teaching of Applicant's Prior Art by employing a phosphorescent compound having a planar molecular skeleton so as to obtain a high luminescence efficiency for the device.

#### ***Response to Arguments***

7. Applicants' arguments filed on October 08, 2002 have been fully considered but they are not persuasive.

In regarding to the objection to the drawings, Applicants argued that Applicants have not amended the drawings since the present invention encompasses luminescence devices of any of the structures shown in the drawings. The Examiner disagrees with the Applicants' remarks because the Applicants discloses in the specification that Figures 1 and 2 show a basic structure of an organic EL device in,

e.g., Macromol. Symp. 125, pp 1-48 (1977) (page 1, lines 16-25), and Fig. 3 shows a structure of an organic EL device which is discussed in, e.g., the following articles: (1) "Improved energy transfer in electro-phosphorescence device" (D.F. O'Brien et al., Applied Physics Letters Vol. 74, No. 3, p. 422 (1999)); and (2) "Very high-efficiency green organic light-emitting devices based on electro-phosphorescence" (M.A. Baldo et al., Applied Physics Letters Vol. 75, No. 1, p. 4 (1999)) (page 4, line 22 through page 5, line 23). Thus, those drawings should be designated as Prior Art because only that which is old is illustrated.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

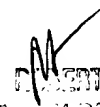
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.

Thoi Duong



12/08/2002



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